WORLD FEDERATION OF NEUROLOGY
XXVII WORLD CONGRESS OF NEUROLOGY (WCN 2025)
12-15 OCTOBER 2025 | SEOUL, SOUTH KOREA
KNA KOREAN NEUROLOGICAL ASSOCIATION

MRI Features of NMOSD and MOGAD

Ho Jin Kim, MD, PhD
Department of Neurology
National Cancer Center, Goyang, Republic of Korea

Disclosures:

- I have received a grant from the National Research Foundation of Korea and research support from AprilBio, Eisai, Good T cells and UCB; received consultancy/speaker fees from Alexion, Altos Biologics, AstraZeneca, Biogen, Daewoong Pharmaceutical, Eisai, GC Pharma, Handok Pharmaceutical, Kaigene, Kolon Life Science, MDimune, Merck, Mitsubishi Tanabe Pharma, Roche, and Sanofi

- I serve as a co-editor for Multiple Sclerosis Journal and associated editor for Journal of Clinical Neurology.

- I hold no personal shares in any pharmaceutical company.

Learning Objectives

By the end of this session, participants will be able to:

- Recognize the characteristic MRI features of NMOSD and MOGAD in brain, optic nerve, and spinal cord imaging that should prompt antibody testing for AQP4-IgG or MOG-IgG
- Differentiate NMOSD and MOGAD MRI patterns from those typical of MS
- Identify “red flag” imaging clues in each disease
- Understand the pathophysiological correlates of distinctive MRI findings in each disease
- Apply MRI pattern recognition to improve diagnostic accuracy and guide early treatment strategies

Key Messages (1)

- NMOSD and MOGAD differ from MS by lesion morphology, distribution, and enhancement patterns.
- MRI patterns should be interpreted in the clinical context and integrated with serological testing.
- Early, accurate differentiation supports targeted therapy and improves outcomes.

Key Messages (2)

Characteristic NMOSD MRI features include:

- Longitudinally extensive transverse myelitis (LETM; ≥3 vertebral segments) with central cord involvement.
- Optic neuritis with extensive (>1/2 optic nerve length), posterior, and often chiasmal involvement.
- Brain lesions in periependymal regions (area postrema, hypothalamus, 3rd/4th ventricular surfaces, corpus callosum), extensive hemispheric lesions or corticospinal tract lesions

Key Messages (3)

Characteristic MOGAD MRI features include :

- Spinal cord lesions that may be longitudinally extensive but with predominantly gray matter involvement (“H-sign” on axial images).
- Optic nerve lesions with anterior involvement, perineural enhancement, often bilateral.
- Brain lesions more frequent than in NMOSD, often fluffy, poorly demarcated, and in deep white matter or cortical/subcortical junction

MOGAD MRI lesions often show a high degree of resolution, with many lesions resolving completely, during follow-up scans